

**LISTING OF CLAIMS**

The following listing of claims replaces all prior versions.

- 1           1. (Currently amended) A heterojunction bipolar transistor (HBT),  
2    comprising:  
3           a collector;  
4           an emitter; and  
5           a base located between the collector and the emitter, the base including a layer  
6    of gallium arsenide antimonide (GaAsSb) less than 49 nanometers (nm) thick and  
7    having a doping concentration greater than  $2.5 \times 10^{20}$   ~~$6 \times 10^{19}$~~  acceptors/cm<sup>3</sup>.
- 1           2. (Original) The HBT of claim 1, wherein the gallium arsenide antimonide of  
2    the base has an arsenic (As) fraction in a range from about 50% to about 51%.
- 1           3. (Original) The HBT of claim 1, wherein the gallium arsenide antimonide of  
2    the base has an arsenic (As) fraction in a range from about 50% to about 65%.
- 1           4. (Original) The HBT of claim 1, wherein the gallium arsenide antimonide of  
2    the base has an arsenic (As) fraction in a range from about 50% to about 60%.
- 1           5. (Original) The HBT of claim 1, wherein the gallium arsenide antimonide of  
2    the base has an arsenic (As) fraction in a range from about 54% to about 56%.
- 1           6. (Original) The HBT of claim 1, wherein the gallium arsenide antimonide of  
2    the base has an arsenic (As) fraction of approximately 55%.
- 1           7. (Original) The HBT of claim 1, wherein the base layer of GaAsSb is less  
2    than 20 nm thick.
- 1           8. (Original) The HBT of claim 1, wherein the base layer of GaAsSb is  
2    strained so that its lattice constant conforms to the lattice constant of the collector and  
3    the emitter.

1 9. (Currently amended) The HBT of claim 1, wherein the base layer of  
2 GaAsSb is doped with beryllium (Be) at a doping concentration of between  
3 ~~approximately  $6 \times 10^{19}$~~   $2.5 \times 10^{20}$  and  $4 \times 10^{20}$  acceptors/cm<sup>3</sup>.

1 10. (Currently amended) The HBT of claim 1, wherein the base layer of  
2 GaAsSb is doped with carbon (C) at a doping concentration of between ~~approximately~~  
3  ~~$6 \times 10^{19}$~~   $2.5 \times 10^{20}$  and  $4 \times 10^{20}$  acceptors/cm<sup>3</sup>.

1 11. (Currently amended) The HBT of claim 7, wherein the base layer of  
2 GaAsSb is doped with carbon (C) at a doping concentration of between ~~approximately~~  
3  ~~$6 \times 10^{19}$~~   $2.5 \times 10^{20}$  and  $4 \times 10^{20}$  acceptors/cm<sup>3</sup>.

1 12. (Currently amended) A method for making a heterojunction bipolar  
2 transistor (HBT), the method comprising the steps of:  
3 forming a collector;  
4 forming an emitter; and  
5 forming a base located between the collector and the emitter, the base  
6 including a layer of gallium arsenide antimonide (GaAsSb) less than 49 nanometers  
7 (nm) thick and having a doping concentration greater than  $2.5 \times 10^{20}$   ~~$6 \times 10^{19}$~~   
8 acceptors/cm<sup>3</sup>.

1 13. (Original) The method of claim 12, wherein the base is formed of gallium  
2 arsenide antimonide having an arsenic (As) fraction in a range from about 50% to  
3 about 51%.

1 14. (Original) The method of claim 12, wherein the base is formed of gallium  
2 arsenide antimonide having an arsenic (As) fraction in a range from about 50% to  
3 about 65%.

1 15. (Original) The method of claim 12, wherein the base is formed gallium  
2 arsenide antimonide having an arsenic (As) fraction in a range from about 50% to  
3 about 60%.

1 16. (Original) The method of claim 12, wherein the base is formed of gallium  
2 arsenide antimonide having an arsenic (As) fraction in a range from about 54% to  
3 about 56%.

1 17. (Original) The method of claim 12, wherein the base is formed of gallium  
2 arsenide antimonide having an arsenic (As) fraction of approximately 55%.

1 18. (Original) The method of claim 12, wherein the base layer of GaAsSb is  
2 less than 20 nm thick.

1 19. (Original) The method of claim 12, further comprising the step of  
2 straining the base layer of GaAsSb so that its lattice constant conforms to the lattice  
3 constant of the collector and the emitter.

1 20. (Currently amended) The method of claim 12, further comprising the step  
2 of doping the base layer of GaAsSb with beryllium (Be) at a doping concentration of  
3 between approximately  $6 \times 10^{19}$   $2.5 \times 10^{20}$  and  $4 \times 10^{20}$  acceptors/cm<sup>3</sup>.

1 21. (Currently amended) The method of claim 12, further comprising the step  
2 of doping the base layer of GaAsSb with carbon (C) at a doping concentration of  
3 between approximately  $6 \times 10^{19}$   $2.5 \times 10^{20}$  and  $4 \times 10^{20}$  acceptors/cm<sup>3</sup>.

1 22. (Canceled)

1 23. (Canceled)

1 24. (Canceled)

1 25. (Canceled)